Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

LIBRARY
RECEIVED
AUG 25

UNITED STATES
DEPARTMENT OF AGRICULTURE

DEPARTMENT CIRCULAR 347

Washington, D. C. August, 1925

METHODS AND RESULTS OF COOPERATIVE EXTENSION WORK

REPORTED THROUGH COUNTY AGRICULTURAL AGENTS 1923

H. W. GILBERTSON and C. L. CHAMBERS,
Field Agents, Office of Cooperative Extension Work

CONTENTS

	Page		Page
Status and outstanding developments	1	Means and methods used in advancing extension work	17
Supervision	3	Demonstrations	17
Program of work	6	Methods of obtaining adoption of practices demonstrated	25
Projects	11	Measuring progress	33
Livestock	12	Summary	37
Farm crops	14		
Agricultural economics	17		

STATUS AND OUTSTANDING DEVELOPMENTS

Increased net returns to farmers emphasized.—In conducting county-agent work in 1923, the question of building well-balanced regional, State, county, and community programs of work was studied systematically with regard to both economy in production and efficiency in marketing. Attention was concentrated largely on the problem of increasing the net returns to the farmer. The production of the most profitable crops and livestock was emphasized especially, and farmers were encouraged to produce as much as possible of the food and feed consumed on the farm. County agricultural agents were fully aware of the difficult economic situation which farmers in every section of the country had to meet, and worked effectively to help farmers to solve their problems. The net returns to the farmer were increased primarily through economical production resulting from standardization and increased use of better crop varieties, use of better livestock, disease and pest control, better feeding, and more attention given to market demands. Realizing that farmers must take the initiative in solving their distribution problems, county agricultural agents rendered valuable assistance in the solution of marketing problems, as indicated by the

fact that more than 926,000 farm families were assisted in establishing improved methods of marketing, standardization, and proper grading of products.

More systematic supervision attempted.—County-agent work was analyzed by State and district supervisors in order to increase the volume and improve the quality of work done. The two principal kinds of analysis were the study of work in counties and the review of annual reports. Studies were made in order to measure progress, to determine supervisory needs, and to adapt supervision to those needs. Improved methods for carrying on extension work were emphasized. Fewer projects and more convincing demonstrations were recommended, and these were followed up with better methods of acquainting the people with results.

County-agent work more fully appreciated.—County-agent work has been so well appreciated that, despite straitened financial conditions, the average salary of county agents increased slightly. Table 1 shows the average salary and expenses of county agents on December 31, 1922 and 1923. The average salary of inexperienced county agents for 1923 was $2,270.

TABLE 1.—*Average annual salary and expenses of county agricultural agents, 1922 and 1923*

Item	Dec. 31—	
	1922	1923
Average salary	$2,666.69	$2,691.58
From Federal and State funds	1,439.32	1,462.43
From county funds	1,099.33	1,089.48
From other sources, including private organizations	128.04	139.67
Average expenses [1]	1,120.26	1,061.18

[1] Expenses are paid usually from local funds, and some counties also furnish office help at the courthouse, the cost of which does not appear in the budget.

Some counties reduced salaries, but this was due principally to an inexperienced agent being substituted for an experienced agent who transferred to another county at an increased salary. Counties that have had the services of good county agents and that have realized the value of extension work have usually been willing to assume a larger percentage of the cost. One State reported that 23 counties were ready to appropriate funds as soon as State and Federal funds became available to permit their cooperation.

Having county commissioners meet with county extension committees to consider budgets for extension work has resulted in better understanding and has helped commissioners to realize that the committees were not asking for more funds than necessary. Many county agents have adopted the plan of furnishing county commissioners with a copy of their plans of work for the year and of their monthly and annual reports in order to keep the commissioners more fully informed concerning the work under way. Maps and charts showing amount and distribution of work throughout the county have also been used effectively at meetings where county extension appropriations were being considered.

The number of county agricultural agents employed on December 31, 1922, was 2,082, and on December 31, 1923, was 2,070. There were also 159 negro agricultural agents employed at the beginning of the year and 162 at the end of the year.

SUPERVISION

Effectiveness of supervision increased.—County agricultural agents have usually been supervised by State or district leaders. These leaders, who supervise an average of 14 counties, keep informed regarding the progress made in individual counties through correspondence, reports, personal visits, and district or State conferences. The aim in supervision has been to help county agents render the greatest amount of service to the largest number of people at the lowest cost. To be practical, extension work must fit into everyday experience and help to make the farm more profitable and living conditions on the farm better and more attractive.

Supervisors, through the exchange of information between State and Federal extension offices, bring to agents the best ideas from other counties in their own State and from other States. County agents have usually been glad to avail themselves of the opportunity of drawing upon the experience of more than 2,000 other agents. In the larger States the trend has been toward having one district supervisor responsible for all extension work in his district. Some of the special assignments to individual supervisors have been as follows: Reports, budgets, county projects or plans of work, and program building.

Definite supervisory programs were carefully drawn up at the beginning of the year in more than 30 States. The best supervisory programs were developed through careful study of special needs in individual counties, based on records and conferences with county agents. Table 2 indicates the problems that received most attention from supervisors.

TABLE 2.—*Problems receiving most attention of supervisors during 1923*

Problem	Number of States reporting
Office records and reports	37
Convincing result demonstrations	36
County program building	36
Use of local leaders	26
Analysis or midyear check-up of county extension work	24
State program of work	20
Special training in report writing for agents	20
Community program building	19
Agricultural campaigns preceded by result demonstrations	16
Analysis of State supervision	15
Analysis or survey used as basis for program building	14
County agents' calendars of work	13
Measuring extension progress	12

Supervisors improved extension methods.—Supervisors aided county agricultural agents in preparing for program building, which included consideration of: (1) Methods and questions used in conducting local surveys to determine farm and home problems, (2)

other methods to determine local needs and remedies, (3) methods of reviewing programs of work to consider appropriateness and economic importance of the various extension activities, and (4) the kind of information to be furnished from the State extension office to serve as a basis for sound program building. In giving aid in program building, supervisors helped to perfect the methods used, including the finding of short cuts and simpler but effective methods. The object has been not simply to get a program of work adopted but to lay the foundation for a maximum of accomplishment which requires getting local people to feel their responsibility for carrying on the work undertaken. Supervisors helped to plan more definite demonstrations, so that a larger percentage of them would be convincing.

The analysis of county extension work with agents included comparison of results and methods by phases of projects, volume of work and distribution, and reasons for large amount of work done in some communities or townships and small amount in others. The analysis of annual reports of county agents included a comparison of factors influencing the amount of work done and the results accomplished in order to help determine supervisory needs in various counties. The strengthening of office records and reports was given special attention. This frequently involved setting up a practical office file and record-keeping system at a conference with all agents or with individual agents desiring such assistance.

Supervisors have realized that education is not a process of pouring in, but of gradual development and learning to do by observation, imitation, and actual experience. With more than 2,000 farmers to be reached by the county agent in the average county, the problem of what methods to use in carrying on the work in the most efficient manner and at the lowest cost was considered of primary importance. Therefore, one of the principal duties of the supervisor has been to keep informed in regard to the best methods and to carry this information from county to county. Just as it has been found that it is desirable to have sales managers, foremen, or superintendents to increase the efficiency of supervised groups in other lines, so county agents need an experienced person to counsel with them regarding the best extension methods.

Studies made of the distribution of supervisory assistance in a few States show that supervisors have devoted most of their time to improving extension methods and to maintaining financial support for the work. Supervisors spent more than half of their time visiting the counties.

Procuring and training new agents.—Supervisors have been seeking constantly for men who are well qualified to be county agricultural agents. It is usually required that the prospective agent shall have been reared on a farm and shall have completed a four-year college course in agriculture. A few States have been using an apprenticeship plan for training agents. In these States men who have the required training and experience serve either as county agents at large or as assistant county agents. Some of the States placing prospective agents in counties as assistant agents are Alabama, California, Georgia, Kentucky, Louisiana, Ohio, Oklahoma,

Tennessee, Texas, and Virginia. Texas requires prospective agents to pass a special examination.

Among the States giving a special course on extension work to upper-class students at the college of agriculture are Arkansas, Indiana, Minnesota, New York, Texas, and Wisconsin. Agents in some States, particularly new agents, are given additional training in subject matter at State or district conferences or during individual visits of specialists to the county. This includes training in such subjects as stock judging, poultry culling, pruning, spraying, grading, packing, and the keeping of office records.

Supervisory programs outlined.—Plans for supervision are usually outlined by each State or district supervisor and show the major supervision and seasonal activities contemplated for the year and the counties where each activity is to be emphasized. Following is a typical supervisory program of a district leader:

TYPICAL DISTRICT SUPERVISORY PROGRAM

(1) Assist in developing county and community programs of work. December and January.

(2) Meet with agents and community committees to plan details of methods for carrying out projects decided upon. February and March.

(3) Have county and State programs of work made up, mimeographed, and in the hands of all central-office workers by March 1.

(4) Visit demonstrations with county agents and discuss with agents suggestions for improvements in method. Throughout year.

(5) Check up on the program of work with agents, considering accomplishments to date and plans for completing the work. May to July.

(6) Meet once or twice with county committees to plan extension work for county and again later in year to summarize results and to plan annual meeting. January to March and September to November.

(7) Obtain material from counties for state-wide publicity.

(8) Give agents and office assistants suggestions for keeping office records and making reports. January, February, and November.

(9) Give agents assistance in checking up results. October and November.

(10) Read, tabulate, and analyze agents' annual reports. November and December.

In some States arrangements were made for obtaining summary of goals established at the beginning of the year and results at the end of the year for comparison. A few States provided for three regular visits of the district supervisor to each county agent during the year; the first relating to planning the program of work, the second for consideration of progress and plans for completion of the year's work, and the third for examining results and reports.

Supervisors also furnished, as a basis for supervisory plans, analytical statements of conditions of extension work in each county with reference to funds, qualifications of present agent, strong and weak points in work, attitude of local people, progress of work, and the like. One Texas supervisor summarized the aims and plans for extension work under the following headings: "Finding the problem, finding the solution, constructing the project, selling the project to the leaders, proving that the practice pays, extending the proof to the community, and getting the practice adopted."

Extension methods central thought in conferences.—Most States plan to have the agents bring tentative outlines for the next year's work to the annual conferences, where specialists or supervisors

present the viewpoint of the State extension workers on the projects that should be emphasized during the year. In Virginia, for example, the agents presented their plans of work to the conference, where the plans were subjected to criticism by agents, specialists, and other extension workers. The suggestions received resulted in a revision of the plans of many counties. Programs of such conferences usually included inspirational talks and brief statements of methods used by the agents who were most successful with certain projects during the year, as well as helpful suggestions on such topics as salesmanship and publicity. In some States a committee of county agents was called in to assist in planning the program for the annual conference. The tendency has been to devote most of the time at conferences to a consideration of extension methods.

District conferences were used in planning work for the immediate future and for discussing or demonstrating some of the subject matter to be extended in the district. Among special subjects taken up were news writing, office records and reports, methods of program building, plans for completing the year's work, and the district program of work.

Office assistants have sometimes been invited to attend district conferences for training in office management, especially filing and record keeping. A series of 10 district conferences, attended by 88 office assistants and 44 agents, was held in Iowa in November. The primary aim was to acquaint the office assistants with methods of filing, record keeping, and preparing report material. Exhibits of the most up-to-date office equipment, record forms, and filing systems have been set up at such conferences to serve as a basis for discussion. Tours to near-by farms to observe demonstrations have also been arranged.

Georgia reported 10 district group meetings of agents, 7 of which were held for consideration of record keeping, filing, and program building, and 3 for developing regional agricultural programs. The State supervisor made the following comment: "As a result we are getting better records, better monthly reports on a more uniform basis, and much better annual reports."

PROGRAM OF WORK

State program based on all available facts.—Until recently State programs of work were only a compilation of projects and lacked sufficient coordination and adjustment between subject-matter departments. In most cases sufficient study was not given to the agricultural conditions in different parts of the State. Recently, however, several States have attempted to formulate systematic State programs of work by studying the recommendations of the agricultural college through conferences of extension workers. Such conferences determined, for example, in what counties the dairy industry or the beef industry was to be emphasized, and where various crops should be encouraged. Some States went a step further and designated the subprojects, the long-time goal, and the goal for the year. Table 3, giving a summary of the dairy project adopted in 24 counties in Washington, illustrates this type of program.

TABLE 3.—*Summary of dairy project adopted in 24 counties in Washington*

Subproject	Number of counties	Number of communities	Goal for 1923	Four-year goal
Cow testing	16	110	882 farmers to test cows in associations. 9,153 cows to be tested for butterfat.	Increase average production of butterfat 50 pounds per cow.
Better sires	15	98	4 breeding demonstrations to be conducted. 103 purebred sires to be placed. 10 bull associations to be organized.	
Placing females	9	42	229 well-bred females to be placed	
Feeding	15		14 feeding demonstrations to be conducted. 149 men to feed balanced rations.	
Tuberculin testing	10	65	Obtain application for testing 10,097 cows.	
Tours	11	21	Conduct 21 dairy tours	
Exhibits	2	2	Hold 2 dairy exhibits	
Surveys	1	19	Make dairy survey	

Several States developed a long-time State program in consultation with an agricultural advisory committee. Virginia, for instance, followed such a procedure when about two years ago the leaders of various farm organizations were invited to attend a conference at the State agricultural college for the purpose of forming an advisory committee. The committee was composed of representatives of farm organizations, the State department of agriculture, the State division of markets, the agricultural press, the agricultural departments of railroads, the agricultural committee of the State bankers' association, and other agencies interested in agriculture, with the State director of extension service as chairman. The chief purpose of the advisory committee the first year was to offer assistance to the cooperative-marketing associations, and new associations were invited to bring their plans of organization before the committee to be discussed at length. Associations of poultry producers, of fruit growers, and of seed growers submitted plans and received assistance.

The conference of the advisory committee the second year was devoted to a discussion of plans for enlarging the duties of the committee, including the development of a 5-year program. It was decided that if the program was to have value it must be based on an analysis of agricultural conditions in the State. In order to make the study the chairman appointed committees representing commodity interests. For example, the president of the State poultry association was chosen chairman of the poultry committee. The committees included farmers, business men, bankers, extension workers, and investigators. Care was taken to see that all farm organizations were represented. College employees were appointed secretaries in order to coordinate the work of the committee with that of the college and the United States Department of Agriculture. While the State committees were at work county extension agents were attempting to develop county programs in somewhat the same manner.

Extension and experiment station workers of Colorado, Oregon, and Tennessee recently analyzed facts regarding crop and livestock production and consumption. Studies were made of commodities

with respect to their adaptation to regional soil and climatic conditions, market demands, and facilities. Tennessee also made a study of extension methods to be used in obtaining the adoption of recommendations made by committees. In Oregon, the first step in program development was followed by a state-wide conference of representative farmers and business men. Although the long-time State program is yet in the experimental stage, experience indicates that the study given to the subject will amply repay for the time spent.

All forces united in county program building.—In the beginning of extension work it was necessary for county agents to work directly with individuals, many of whom were unwilling to cooperate. The work was handicapped by the public's lack of sympathy and faith and the agents' lack of experience and vision. Some agents also made hobbies of particular projects, which they emphasized in building programs. Often their favorite projects were not based on the economic needs of the counties; and although such agents carried on other demonstration work that favorably impressed the public, the mistakes they made through unwisely fostering favorite projects hindered progress in extension work. The discovery of such mistakes sometimes caused supervisory forces and specialists to make stereotyped programs and send them to the agents.

Through experience extension forces were brought to realize that people do not wish to be saved, but wish to save themselves. This realization explains the most recent stage of county program development, which brings in all interested forces. Extension workers have helped to develop county-wide group consciousness of major problems of production and marketing.

Most States now have some form of advisory board or committee cooperating with the county agent in developing county programs. The first step is to make a thorough study of agricultural conditions in the county, taking into consideration products shipped in and out, and climatic and soil conditions. This study often is made with local people who are interested in the same commodity. A tentative program is usually developed and an analysis made at the end of the year to measure progress.

In a few States meetings have been held of representatives of all agricultural interests in the county, sometimes including representatives of boys' and girls' clubs. At the first session of such a meeting the men and women discuss problems of common interest. Separate groups are then formed to discuss particular problems. Afterwards these groups are brought together again for the adoption of the whole program. The purposes of extension work are made clear at such meetings, and it is pointed out that the object is not to increase production but to obtain economic production. Agricultural facts relating to the county are presented to bring out some of the current problems. For instance, at a meeting in Douglas County, Nebr., attention was called to the fact that only 1 acre of legumes was grown for every 16 acres of cultivated land, and that the average production per hen in the State was 67 eggs, whereas the average production per hen of 12 accredited flocks for the county was 108 eggs. When problems are presented at such meetings those present who have had experience as demonstrators or leaders are asked to

relate their experience, or extension workers are called upon to suggest a type of demonstration that will solve the problem.

Although members of the program committee may name the problems, agree on the possible remedies, and set the goals, it has been found necessary for the extension representative to direct the meeting so that the adopted program will be in keeping with the assistance available and the policies of the extension service.

County papers are requested to carry information about the program adopted, and some counties have copies of the program printed and distributed. Such publicity methods not only bring extension work to the attention of many business men and others who would otherwise know little of it, but they make the public realize that the program is not arbitrarily forced upon them. In several counties in Georgia, business organizations financed the printing of the program and aided otherwise in obtaining its general adoption. In Wilkes County one business man became so enthusiastic that he had several signs painted to call attention to the major projects and the county slogan. Interest aroused in the county program causes many persons later to render valuable assistance in developing community programs.

Local people help decide upon work to be done.—Community programs of work were developed cooperatively through various methods by extension agents and local people in 23,213 communities, or an average of 12 per county. In some communities the agent obtained the suggestions of leading farm people by simply discussing with them the work to be undertaken; in other communities a list of projects was presented by the agent at a community meeting for consideration and approval; and in still others plans were developed at a community committee meeting which were later presented at a community meeting for revision and adoption.

Comparison of the volume of extension work carried on in various communities of the same county shows that, all other things being equal, the volume accomplished is mainly dependent upon cooperation of the leaders in the community and work done in the community by the agent. The people usually have shown themselves ready to work with the agent when they have had a voice in deciding what work was to be done. Actual deliberation regarding what should be done, how much, when, where, and who were to be leaders and demonstrators has been accomplished successfully in local committee or small-group meetings. Suggestions by the people for modification and final approval of the community or township programs of work have been given in community meetings. A ballot has been used in Iowa and South Dakota for getting the expression of local people regarding the choice of projects. It has been found desirable to have ballots indicate that the signer is not only interested but willing to cooperate in projects checked. Ballots have also been used in Illinois for determining what should be included in the county programs of work.

After project leaders have been selected, it has been found essential that they meet with the county agent to determine what they can do to help carry the program to a successful completion. In 1923, 1,102 county agents reported that an average of 15 committee meetings for training local leaders were held per county. In commenting on

such committee meetings, the county agent of Shelby County, Iowa, reported that without them some projects in the program would never have been developed. Table 4 shows the goals and results accomplished under the program of work of Douglas Township, Shelby County, Iowa.

TABLE 4.—*Goals and results accomplished under program of work of Douglas Township, Shelby County, Iowa, 1923*

Activity	Goals for 1923 [1]	Results in 1923 [1]	Goals for 1924 [1]
Use of economical mineral mixtures for hogs	4	3	4.
Eradication of tuberculosis		111 signers of petitions.	County levy and active work.
Culling poultry		1	6.
Feeding dry mash to poultry	6	6	General practice.
Remodeling henhouses	2	1	3.
Use of limestone for alfalfa	5	3	Distribute carload.
Soil-erosion control demonstration	2	2	5.
Growing soybeans	6	35	20.
Growing Iowar oats		30	15.
Corn-variety demonstrations (16 contributing seed).	1	2	2.
Use of northern-grown seed potatoes		30	6.
Cold-pack canning of meat and vegetables		3	General practice.
Making dress forms	15	8	7.
Attendance at 5 months' clothing course	6	40 at local leaders' meeting.	
Clothing-club members		16	16.
Boys' pig-club members		19	20.
Baby-beef club members		3	3.

[1] Stated in terms of the number of people who are to serve as demonstrators or adopt the practices indicated.

The county agent of Shelby County called attention to the fact that this program contained something worth while for everyone to do—men, women, and juniors—in cooperative marketing as well as economical production. The leader of the corn and oats project encountered many unusual difficulties in obtaining and distributing 1,870 bushels of seed oats from a car. The pooling of orders was interfered with by a blizzard. Roads were impassable for teams or automobiles, but the project leader made several trips on foot, which resulted in the distribution of the oats to more than 30 farmers. This variety of oats outyielded the common varieties grown in the township. Although a goal of 6 men to grow soybeans was set at the beginning of the year, the number of men actually growing them reached 35. Nineteen boys and girls from the township showed pigs at the county fair. One of these pigs was the grand-champion pig-club barrow at the Iowa State Fair. Sixteen girls joined the clothing club, and one of its members won a trip to the International Livestock Show at Chicago.

The county agent stated that "through the entire list of projects, wherever an outstanding piece of work was done there was an energetic and loyal local leader in charge." The people in Douglas Township were unanimous in their desire to continue under this plan. The project leaders held a meeting early in October when results were checked and a preliminary plan was drawn up for presentation at a general meeting. All project leaders were retained except the leader in pig and calf club work, who had made such a good showing that he had been drafted for the county committee.

Other townships in the county have seen the value of the work in Douglas and have adopted similar programs.

PROJECTS

How projects have been developed.—After the county program of work has been agreed upon, plans or projects for carrying out the various subject-matter subdivisions, such as dairying, are outlined by the agent, based on local conditions and suggestions received from the State extension office. Agents and supervisors usually have realized the importance of limiting the number of major projects undertaken in order to conduct more demonstrations and, through mass attack, to obtain more convincing results. Instead of drawing up formal county projects, the tendency has been to outline simple, tentative plans for each project.

Such an outline has sometimes been arranged in calendar form with activities listed by months and has included field meetings, tours, and other means of acquainting people with progress and results. The calendar of work has helped the agent to avoid planning more work for a given month than he could supervise. In some States the outline has indicated what the specialist, the agent, the project leader, and the demonstrator would do. After the general plans for a project have been developed a meeting has sometimes been called of all who had agreed to assist in advancing interest in the commodity. In some instances, county or local project leaders have assisted in getting interested farmers to attend the meeting. The main purpose of such a meeting has not been to have people listen to a subject-matter talk, but to have them take part in planning the method of carrying on the project so as to get the greatest possible amount of cooperation from local people and maximum economic returns. Such planning includes discussion of what is to be done, how much, how, by whom, when, and where.

Some agents have found it advantageous to have available for presentation county statistics relating to the commodity. If, for example, in developing a dairy project, attention has been called to the fact that a third of the dairy cows in the county made a profit, a third paid only for their feed, and a third were fed at a loss, greater interest will be aroused. The question then arises as to production necessary to pay a profit, which naturally opens a discussion of local feed, pastures, and other dairy problems.

The relative importance of production and marketing has usually been weighed carefully by the committee appointed to cooperate in formulating the program of work. Agents sometimes have found that one or more of the members of the committee had a distorted idea of the possibilities of marketing as a remedy for low net returns from farm enterprises. Most county agents have realized that a balance exists between production and marketing and have directed the development around a balanced project plan looking toward procuring a maximum net income for the farmer.

A few county agents have let their zeal for diversification lead them to encourage the production of a commodity for which they have not simultaneously found a market. During the past several years, county agents have emphasized commodity production sufficiently to make cooperative shipments possible. When arrange-

ments have been made for 50 or 60 farmers to market their hogs on the same day, the volume is sufficiently large to attract competitive buying, or to ship cooperatively if the local price is not attractive.

Some outstanding results from extension projects are listed in Table 5, page 19. Space will not permit giving examples of outstanding developments in all projects. The aim in this report is primarily to give typical examples of extension methods used by agents together with such results as will bring out the effectiveness of the methods.

LIVESTOCK

Breeding, feeding, and management of swine emphasized.—North Carolina has done some definite project planning on both State and county swine work. As an outgrowth of a study of the swine situation of the State, a chart was made which revealed the fact that a large number of North Carolina hogs were shipped during January and December when the price of hogs on the Chicago and Baltimore markets was lowest. Other charts were made to illustrate the cost of feeding two litters per year in such manner as to market them in April and September when market prices are highest. Such charts not only proved valuable to county agents in working out the swine project, but in bringing about the adoption of the recommended practice through publicity. By coordinating the subprojects of feeding and management and of marketing both were strengthened. The mass attack for definite feeding demonstrations at a certain time made it possible to develop carload shipments of a grade that demanded the highest price during the peak of the market. As it was deemed advisable also to encourage the introduction of purebred swine in some counties, club boys were urged to demonstrate the management of purebred swine, including proper housing for farrowing, and to breed sows so as to take advantage of the market. Simple instructions on feeding and definite forms for recording results were prepared.

California reported that since 1916, 5,903 purebred swine had been placed on 4,439 farms through club work alone. From 1910 to 1920 the total number of hogs in the State increased only 15 per cent, but the number of registered purebred hogs of all breeds increased 74 per cent. These figures show that club work played an important part in increasing the number of purebred hogs and undoubtedly improved the average quality of all hogs produced in the State.

Collin County, Tex., unveiled a monument to the last scrub boar in the county on October 11, 1923. A survey was made to locate scrub boars, and on the day set the swine breeders gave a purebred to the owner of each scrub. Several thousand persons witnessed the unveiling of the monument to the triumph of progressive swine breeding (fig. 1).

Lyon County, Kans., used the slogan, "A hog self-feeder on every farm in the county." Under supervision of the county agent and specialist, self-feeders were constructed containing three compartments, one for corn, wheat, or kafir; one for shorts or bran; and one for tankage. Farmers were urged to keep one of these feeds in each compartment. It was the first time most of them had ever fed a balanced ration to hogs. The results were so satisfactory that 100

more farmers used self-feeders than in 1922 and now are demonstrating to their neighbors this method of feeding swine. The self-feeder program brought inquiries from farmers in seven States, besides numerous inquiries from within the State.

Better cows and more profit per cow.—Meeker County, Minn., furnished an excellent example of accomplishment in dairying. More than 47,000 cattle were tested for tuberculosis in two weeks. Four committeemen from each township met with the county agent, adopted a plan, and signed up 70 per cent of the cattle owners in six days. They presented the matter to the county commissioners, and made arrangements with the livestock sanitary board and the United States Department of Agriculture for testing all cattle. Thirty-four veterinarians were procured and taken from place to place by farmers assigned to the different school districts. These farmers did much to facilitate the work and to carry it on economically. They had the good will of their neighbors and therefore could speed up the work without offending the community. Fifty-seven carloads of condemned cattle, totaling 1,700, were shipped, and barns and premises on 541 farms were disinfected and cleaned.

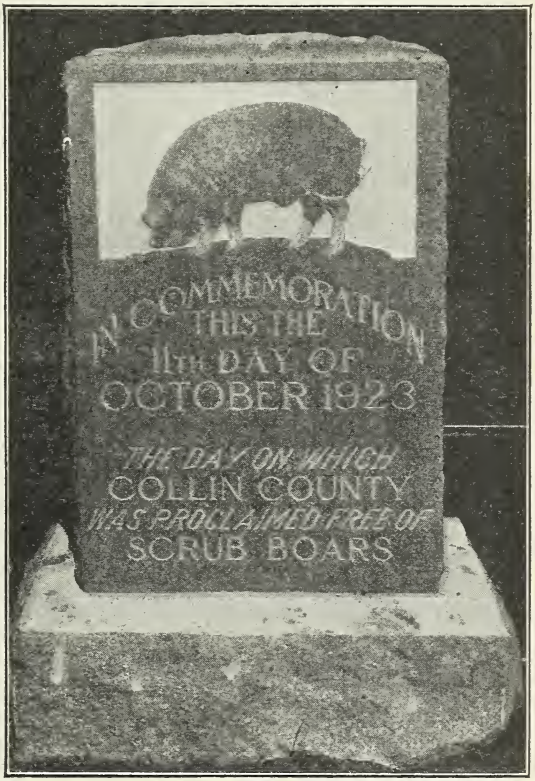

FIG. 1.—Monument to the last scrub boar in Collin County, Tex. As a result of extension work, all scrub boars in the county were replaced by purebred boars. During 1923, county agricultural agents throughout the county assisted 13,227 farmers in procuring purebred sires and 14,467 in procuring purebred females. (Photograph furnished by Texas Extension Service)

Although there is a belief in some States that agents have spent too much time displaying motion pictures, yet such films as "Out of the Shadows" have had a strong influence in developing sentiment for phases of the work in this and other projects.

The growth and influence of a dairy-feeding and record-keeping project is illustrated by the work in Thurston County, Wash. Thirteen members of the cow-testing association, owning 169 cows, completed the year's work in April. The average butterfat production was increased from 262.7 to 346.2 pounds, an increase of 83.5 pounds during the year. The profit per cow above feed cost increased from

$68.67 to $99.52, or $30.85. This shows a profit on the 169 cows over the previous year of $5,213.65. The average increased profit per cow for those who had been in the association two years was $36.63, or $5.78 more than the average gain for the association, indicating that after members have been in one year there is still room for improvement. One of the demonstrators increased the average butterfat production 104.3 pounds per cow, and thereby increased his profit above feed cost from $43.58 to $86.33 per cow, or approximately 100 per cent. An all-day meeting was held on this farm and a near-by farm, where dairy records and feeds and feeding were discussed. One herd in the cow-testing association was put on sale to dispose of surplus stock. After the sale the auctioneer stated that the cows sold at an average of $25 to $30 more than if the records of production had not been available. The association has since increased to 52 members, who own 600 cows.

Rockingham County, Va., reported a dairy association which sold $228,979.04 worth of milk and cream, and paid $14,010.37 on the plant it had purchased. The members, without increasing the price of milk to consumers, received at least $20,000 more for their products than if the association had not been formed.

FARM CROPS

Control of plant diseases and insect pests demonstrated.—It has been estimated from surveys that the yields of crops are reduced a tenth by ravages of plant diseases and insects, causing an annual loss of nearly $3,000,000,000. County agents have helped to meet this problem by establishing convincing demonstrations of control methods and by arousing interest in the combating of diseases and insect pests. They have also established demonstrations to meet other problems of crop production in their counties.

The Hessian-fly control work, through use of various methods of convincing farmers of the importance of observing the fly-free seeding dates, has been so satisfactory that in many counties in the western half of Ohio it is difficult to find an early-sown field. Estimates and surveys show that, in 1919, 440,000 acres of wheat were sown there before the fly-free dates, whereas in 1923 only 35,000 acres were thus sown. In 32 counties 11 per cent of straws were found to be infested with Hessian fly in 1922 and 4 per cent in 1923.

Clark County, Kans., reported 1,992 pounds of arsenic distributed, which protected about 75,000 acres of wheat infested with grasshoppers. In Johnson County, Kans., an area 6 miles square was burned off for chinch-bug control, resulting, according to estimates of farmers, in an increased yield of 6 bushels of corn per acre. Eighteen leaders were put in charge of the burning. In Bon Homme County, S. Dak., approximately 200 miles of fence row and roadside were burned for the control of chinch bug. Chinch-bug damage was noticeably less where such burning had been done systematically.

No other problem has been so important in the cotton-producing section as boll-weevil control. More than 63,000 farmers were induced through the extension service to spray or dust for the control of cotton diseases and insect pests. One district in Georgia reported that no other project had received so much attention during 1923 as that of cotton. Cotton production increased at least 100 per cent in

that district over the production in 1922. This increase was attributed largely to the fight against the boll weevil and the use of higher grades of fertilizer.

In many counties, projects were developed jointly for juniors and adults. In Spalding County, Ga., the cotton project was developed in this manner. Thirty members made 30 bales of cotton which sold for an average of 37 cents per pound. The boys used 1,000 pounds of fertilizer per acre and used various methods of boll-weevil control. Fertilizer and poison were purchased by banks and furnished to the boys on their personal notes without security or interest. Each boy paid his note at the bank, and 20 started savings accounts to provide funds with which to go through college.

In spite of crop damage by the boll weevil, Claiborne Parish, La., has been producing one-half to 1 bale of cotton per acre. This has been due largely to a stimulation of interest in problems relating to cotton and a coordination of several subprojects. During the spring farmers were interested in the cooperative purchase of seed. The county agent of Claiborne Parish has found that an attractive price on legume seed and a good demand tend to induce farmers to diversify. Generally, problems of production occupy the attention of farmers during the summer and cooperative selling and buying during the fall.

Certified seed improved crop yields.—Kota wheat was distributed among 18 farmers in Perkins County, S. Dak. In every case the resulting grade was No. 1, and the average yield was 16 bushels per acre, while Marquis yielded 12 bushels, grading No. 3 or No. 4. In Sully County, S. Dak., 50 boys were supplied with seed corn of an adapted strain of yellow dent. They obtained yields ranging from 35 to 65 bushels per acre, with an average of 47, which is 12 bushels more than the county average for the year.

The seed-potato improvement project continued to grow in popularity. Antrim County, Mich., reported a price premium of $50,000 for the growers, and an average increased yield from certified seed of 50 bushels per acre above table stock. This means $70,000 to $80,000 additional money brought into the county. In Butler County, Ohio, 14 leaders in the certified seed-potato project procured 7 carloads of certified seed potatoes, or 3,266 bushels. On 11 demonstration plots on which certified seed was used, an increased yield of approximately 40 bushels to the acre over the home-grown seed was obtained.

Some interesting work has been done in emphasizing disease-resistant varieties of oats of high-productive qualities. On a variety of oats known as V. P. I. No. 1, Virginia reported that an average increased yield of 9.7 bushels per acre was made by 107 farmers completing demonstrations on 756 acres.

Legumes reduced fertilizer and feed costs.—Realizing that farmers are spending more than a billion dollars per year for commercial feeds, especially those of high protein content, and about a third of a billion dollars for commercial fertilizers, county agents have undertaken the task of reducing these costs by getting farmers to increase materially their legume acreage. Legumes supply not only the necessary protein to supplement other home-grown feeds but also nitrogen, which is the most expensive fertilizer element used. County agents supervised 70,392 adult and junior legume-growing demon-

strations, principally of soybeans, alfalfa, sweetclover, and cowpeas. They reported increased or improved legume growing due to their work on more than 250,000 farms, involving nearly 2,000,000 acres.

Lee County, Ark., has always had to purchase hay for feeding livestock. In 1923, however, through the efforts of the county agent and a special committee, the county raised and sold to neighboring counties thousands of tons of lespedeza hay, which brought a larger cash income than the cotton crop. The rapid increase of interest in this project is shown by the fact that 300 acres of lespedeza were planted in 1921, 1,000 acres in 1922, and 4,000 in 1923.

An example of facilitating the adoption by farmers of a recommended practice was reported by the county agent of Tippecanoe County, Ind. The owner of an elevator installed a limestone bin

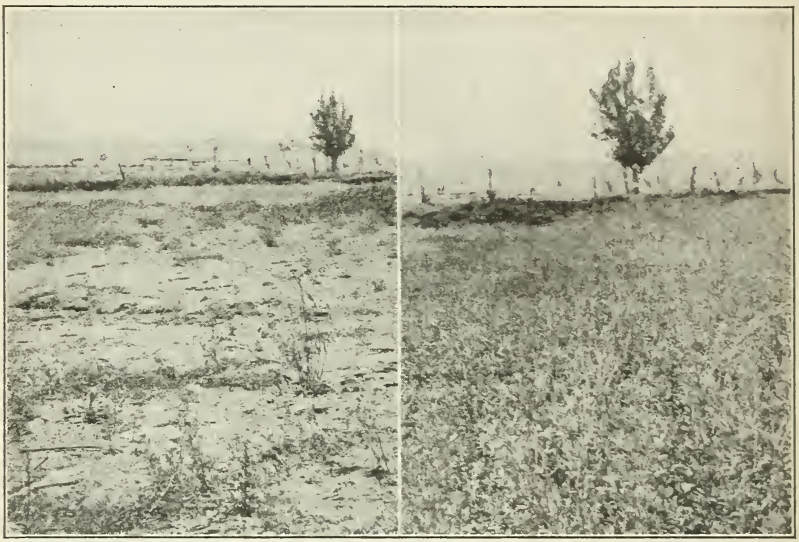

FIG. 2.—Demonstration in use of lime and phosphate in sweetclover field. At the left is the unfertilized portion of the field, which produced only 11 pounds to 60 square feet, or at the rate of 4 tons per acre. At the right is the portion of the field where lime and phosphate were applied, which produced 7 tons per acre. During 1923, 63,702 farmers followed the advice of county agricultural agents in use of lime or limestone. (Photographs furnished by Alabama Extension Service)

and procured a spreader, which was rented at 25 cents per ton to farmers who purchased limestone. As a result, other elevators installed such bins, and railroad officials made efforts to give better rates. Barbour County, Ala., used more lime and phosphate and increased the production of sweetclover (fig. 2). In 1923, 10,000 pounds of vetch and 250 pounds of sweetclover were sown in the county, as compared with 3,000 pounds of vetch and 50 pounds of sweetclover in 1922. New York reported that the amount of lime used in that State for agricultural purposes had doubled and that there was a corresponding increase in the alfalfa acreage.

Although farmers of Claiborne Parish, La., grow velvetbeans to increase soil fertility, it has been demonstrated beyond question that nitrate of soda and acid phosphate can be used to advantage. In 1922, 225 tons of nitrate of soda were purchased cooperatively, which

in 1923 was increased to 730 tons of nitrate of soda and 503 tons of phosphate, indicating a general adoption of the recommended practice. In this as in many other counties local committees had charge of the purchase and distribution of fertilizers, allowing the county agent to give instruction in the use of fertilizers while cars were being unloaded.

AGRICULTURAL ECONOMICS

Nearly a million farm families assisted with marketing problems.—More than 926,000 different farm families and 6,000 cooperative associations doing a business of nearly a third of a billion dollars at a saving of approximately $25,000,000, were assisted by county agents with their marketing problems during the year. The fullest cooperation was given in the formation of cooperative-marketing organizations, although agents did not personally do the organizing or act as business agents. Most farmers have learned that the agent's work must be educational. Among the most important kinds of service rendered to marketing organizations was the educational work of acquainting farm people with the principles and essentials for success in cooperative marketing. In addition to giving assistance to new cooperative enterprises, the agents gave a large amount of information to associations already formed with special reference to proper organization, incorporation, financing, and management. An attempt was also made to keep farmers informed regarding marketing demands and prices and to place more emphasis on the fact that the successful marketing of farm products begins with seed selection and the choice of breeding stock.

County agents realized that, although all cooperative-marketing associations are not successful or a remedy for low prices, yet when properly organized and managed, they serve as valuable agencies in leading producers to give careful and unprejudiced study to all factors that influence prices, thereby renewing interest in methods of producing high-quality products and marketing them in such form as to command the highest prices. Where marketing associations were well developed, a large amount of extension work other than marketing was arranged with or through their officers or members. They helped to increase the demand for demonstrations in grading fruit, tobacco, cotton, wool, and other products.

Commodity organizations frequently selected committees of farmers to pool orders for pure seed, spray material, fertilizer, lime, and other supplies; and when such orders were placed with the local cooperative association, the material was usually furnished to members at cost. Reduced cost has served as a strong inducement to farmers to grow legumes, spray their fruit, use poison bait for control of rodents and insect pests, and to adopt many other desirable farm practices. Committees of farmers and county agents have been seeking constantly for conveniently located sources of lime. In Calhoun County, Mich., 7,000 cubic yards of marl were taken out by farmers at a saving of $2.40 per ton, or $12,600 per year. This marl sold at stock pile for $1 per cubic yard, whereas lime of practically the same composition sold for $3.65 per ton.

Florida county agents reported that special committees which arranged for financing groups of farmers in purchasing materials

also assisted in making exhibits and obtaining appropriations for extension work. Out of commodity interests developed through demonstration work associations have been formed, many of which have grown to the point where they no longer need the supervision of the county agents. These associations are not only interested in economic production but also in marketing.

In Wisconsin orders were pooled for more than 3,435,000 pounds of picric acid and sodatol and 2,000,000 blasting caps for land clearing, which were distributed to about 10,000 farmers in 68 counties, at a saving of more than $500,000.

Farmers in Day County, S. Dak., sold Grimm alfalfa seed at 35 cents per pound, thereby saving 5 cents per pound for the farmers of Minnesota and Wisconsin who bought the seed, and at the same time netting to the growers 10 cents per pound above prices offered by seed houses.

Mississippi reported assisting in the organization of the local truckers' associations and their federations into a State truck-marketing association, which assisted in getting good seed and proper fertilizers, and in standardizing products and packages. Through such associations farmers sold cooperatively approximately 800 cars of produce, an increase of nearly 300 per cent over the sales in 1922.

Butler County, Nebr., reported an interesting illustration of cooperative buying of feeder cattle. At the suggestion of the county agent, 12 farmers made a trip to western Nebraska, where they purchased 670 head of cattle in Keith County after looking over 8,000 head in five different counties. A special train was obtained which made it possible to ship the entire distance without unloading. Two large banners were placed on one side of the freight cars to tell the story of how 20 cars of Keith County feeders were sold directly to the Butler County farmers. The farmers reported a saving of 72.5 cents per 100 pounds, or a total of $159.50 per car, in favor of direct buying. Among other advantages reported were less danger from disease and less shrinkage. The cattle quieted down sooner after unloading and got on feed more quickly.

Twelve years ago Oneida County, Wis., was unknown as a potato-producing center. Due to the assistance and encouragement of county agents in subsequent years, 80 carloads of one variety of seed potatoes were shipped to other States in 1923. As a result of the same influence and various means of publicity 350 carloads of Wisconsin certified seed potatoes were sold to outside buyers at prices ranging from 80 cents to $1.25 per bushel, but there was very little demand for common stock. In Morgan County, Tenn., repeated attempts were made to form an organization that could handle the potato crop. After the work was well developed through demonstrations, leaders were chosen who emphasized a standard variety. An association was formed, and the members agreed to plant Green Mountain potatoes. Two carloads of certified seed were purchased from Wisconsin. It was then planned to demonstrate cooperative marketing of the crop, and the potatoes sold outside of the State brought an average of $1.18 per bushel f. o. b. the home shipping point. The last car was shipped to Birmingham, Ala., where it brought 10 cents per hundredweight above the noted Idaho

whites. Nebraska county agents reported that 200,000 bushels of certified seed potatoes were sold for 50 to 75 cents per hundredweight over table stock, representing a total net gain to farmers of the State of about $95,000. One method which has been used by these States for advertising the advantages of using disease-free certified seed has been the furnishing of a considerable amount of seed for demonstration purposes in States farther south. For instance, Nebraska associations contributed a carload of seed for distribution among potato-club members in some Southern States.

South Dakota reported that county agents counseled with committees of farmers in the formation of wool pools involving half of the 1,500,000 pounds handled by the state-wide wool pool. The prices received were 38 to 45 cents per pound, representing an increase of 3 to 5 cents per pound over prices offered by private buyers at the time of the shipments. The West Virginia supervisors reported that the wool pool was successful in obtaining better prices for wool and in selling the wool on its merits.

An illustration of poultry marketing was reported by the county agent of Rice County, Minn., who assisted a committee of farmers to develop a plan for a poultry association, using local creameries as receiving stations for gathering and grading eggs for market. Members of the association reported a material improvement in the quality of eggs marketed, 85 per cent of them grading "extra first," whereas before the organization of the association 40 per cent were graded as "seconds." The association has been able to compete with near-by markets and in many instances has paid from 6 to 8 cents more per dozen than could be obtained elsewhere. At the end of 1923 this association had more than 500 members and handled an average of more than one carload of poultry each week. Another achievement of the association took place at Thanksgiving time, when, by taking charge of the dressing of turkeys, geese, and ducks, it was able to pay 25 per cent more than local prices. The increase in price received was as much due to improvement in the quality of the product sold, brought about through an educational campaign among members of the association, as to the fact that an organization was formed for collective bargaining.

Table 5 is a summary of the most outstanding facts relating to various projects carried on by county agricultural agents.

TABLE 5.—*Project summary*

Project	Agents working on project	Communities participating	Voluntary leaders assisting	Days' assistance rendered by leaders	Result demonstrations [1]	Practices adopted
Animal husbandry	1,766	14,326	18,316	33,974	42,528	238,016
Community activities	674	6,191	10,884	23,411		
Dairy husbandry	1,876	8,947	10,300	19,378	13,912	292,075
Farm crops	1,897	20,778	27,258	43,605	162,297	991,710
Forestry	382	775	460	489	1,450	4,592
Horticulture	1,632	9,306	8,120	11,972	31,190	225,051
Poultry husbandry	1,825	18,481	13,265	20,753	36,262	213,633
Rodents, predatory animals and birds	496	3,906	3,573	6,981	27,987	173,024
Rural engineering	1,657	5,558	3,746	6,623	9,425	105,028
Soils	1,971	7,279	5,305	6,471	34,502	322,065
Miscellaneous	1,783	18,741	37,466	99,260	51,547	1,295,243
Total			138,693	272,917	411,100	3,860,437

[1] Includes both adult and junior demonstrations.

MEANS AND METHODS USED IN ADVANCING EXTENSION WORK

DEMONSTRATIONS

Farmers convinced through demonstrations.—A result demonstration as set forth in this report is an example of an improved farm practice made by a farmer or a member of his family resulting in an increase of profit, comfort, or convenience above the average of the community. More than 400,000 result demonstrations were reported by county agents. Extension forces realized as never before that demonstrations are not only the very foundation of extension work, but that they offer the most forceful art of persuasion (fig. 3). They impel attention, inspire confidence, create desire, and

FIG. 3.—Demonstration in use of fertilizers for cotton. At the left is the yield from four rows of unfertilized cotton, which produced at the rate of 500 pounds of seed cotton per acre. At the right is the yield from four rows of cotton that was fertilized with 150 pounds of acid phosphate and 150 pounds of nitrate of soda per acre, which produced at the rate of 1,166 pounds per acre. Demonstrations such as this convince farmers of the value of the practice demonstrated and impel them to follow improved methods. County agricultural agents reported that improved practices of cotton culture were adopted on 136,239 farms during 1923. (Photograph furnished by Mississippi Extension Service)

prompt decision and action in a way that excels any other method yet discovered. People are much more impressed with the results made manifest through demonstration than they are by opinion or the narration of results obtained by experiment stations located some distance away. The average farmer "learns not from the words of wisdom but from the hands of experience," either his own or that of his fellow workers. Such learning is most convincing, each step taken creating a demand for the next.

A close study was given to crop and livestock demonstrations to see that they solved the problem of greater financial gain, which is the measuring stick applied by the farmer. Special thought was also given to planning demonstrations that would be within the

means of the average farmer and would make it easy for him to adopt the recommended practice. Greater emphasis was placed on economic production through well-thought-out result demonstrations based on community needs. Such demonstrations are most convincing because they leave little to faith and the imagination. The average number of adult result demonstrations reported per county was 125.

County agents made more effective use of demonstrations conducted by club boys. Club demonstrations were enlarged and the opportunity of service they afford was emphasized, thus dignifying the venture and making a stronger appeal to older boys. Such demonstrations not only influenced the adoption of improved practices but also were important factors in directing the energy of the rural boy into useful channels. An example of far-reaching results was reported by an Iowa county, where the champion corn-club boy of 1913 took up pig-club work the next year, procuring a Chester White gilt. In 1923 he was one of the leading breeders of Chester White swine in America and a leader in community activities in his county. His winnings at State and national shows were the largest of any individual or firm. This is merely an illustration of the inspiration thousands of boys have gained through extension work. In 1923, 1,831 county agricultural agents reported carrying on club work. The average enrollment for all agents was 103, and the average number completing all State requirements was 54.

Special emphasis was placed on having enough work done and a sufficient number of demonstrations in each county to make the results convincing. When several demonstrations were in progress at the same time, no single demonstrator could excuse his own negligence by asserting that the recommended practice was undesirable. Since most farmers will not travel far to see field demonstrations, it has been found essential that demonstrations be so well distributed that they are easily accessible to all farmers in the community. The distance which farmers have voluntarily traveled to see a demonstration has depended on their interest in the problem relating to the commodity, the publicity given to the outstanding results of the demonstration, and the influence and standing of the demonstrator in the community.

Before it is possible to demonstrate, it is necessary that the agent know approximately what the results will be, and the demonstration must be so designed as to prove beyond doubt the value of the recommended practice. It has been proved that the appeal is stronger when only one alternative is presented than when several are given as in the case of the so-called test plot. If a number of different fertilizers or combinations are used on separate rows, for example, the idea is established in the beginning that the agent is not sure what to recommend. At the close of the test the element of doubt is still present and is further complicated by the multiplicity of facts presented.

Crop demonstrations.—Crop demonstrations totaling 162,297 were developed on preparation of seed bed, cultivation, pure seed, fertilization, and disease and insect control. Some examples of the work follow.

The principal line of work with farm crops in Nebraska was the corn-type demonstration illustrating the superiority of the moderately smooth type of seed over the rough type. A summary of this work conducted during the past three years in 25 Nebraska counties shows that the smooth type of seed surpasses the rough type in acre yield by more than 7 bushels.

The value of legumes for increasing soil fertility was brought out in a large number of demonstrations. Kansas reported an average increase in acre yield of 36 bushels of potatoes on a total of 826 acres due to the use of leguminous cover crops. A demonstrator in South Dakota plowed under a field of sweetclover and obtained at least 15 bushels per acre more corn than he would have gotten by using other crops.

In Coweta County, Ga., the county agent emphasized the use of crimson clover and placed demonstrations to illustrate its fertility value and value as a hay and forage crop. One demonstration acre of corn following crimson clover produced 60 bushels compared to 15 to 25 bushels on adjoining acreage where legumes were not grown. Grazing demonstrations also gave striking results. Two farmers reported that production of milk doubled from March to June, during the grazing period on crimson and bur clover. The acreage of these legumes was consequently increased more than 100 per cent, 64 farmers planting 560 acres in 1922 and 131 planting 1,200 acres in 1923.

Livestock demonstrations.—Livestock demonstrations numbering 92,702 were conducted largely along the lines of feeding and management, those illustrating balanced rations increasing in popularity. The keeping of accurate records of feed and production costs has had a far-reaching effect on the adoption of recommended practices.

Indiana reported an average production of 60 eggs per hen. Of the 2,000 farmers keeping egg records and cooperating with agents in flock-management demonstrations, 90 per cent obtained 100 to 175 eggs per hen. One district in Georgia reported 174 adult result demonstrations in poultry involving 35,870 fowls. Result demonstrations involving various phases of flock management were conducted by 850 club members, producing $6,875.75 worth of poultry products and influencing 944 other farmers. One agent reported 219 settings of eggs furnished by bankers in the county. The Carroll County Poultry Association, containing 67 members, sold products cooperatively, bought feed, and conducted two egg-marketing circles, one of which marketed approximately $40,000 worth of products during the season.

Demonstrations emphasizing balanced rations and improved livestock also appear to stimulate an interest in home-grown feeds. Several States reported an increased interest in demonstrations illustrating pasture mixtures adapted to certain areas. California has a new type of demonstration called the deferred-grazing demonstration, during which cattle are removed from pasture early enough in the spring to allow forage to develop. On one demonstration, the area from which the cattle had been removed yielded 1½ tons of good forage per acre, whereas the continually grazed area, serving as a check, yielded at the rate of a half ton per acre, largely weeds and unpalatable forage.

Horticultural demonstrations.—More than 31,000 horticultural demonstrations were conducted, most of them illustrating the value of proper management, fertilizers, and improved varieties. An orchard demonstration to cover a period of several years was planned in Connecticut. In 1922, 1 acre of fertilized trees in the orchard produced fruit valued at $384.31, whereas the unfertilized part produced fruit valued at $75.60 per acre. The gross returns for 1923, which was the off year, were $163.25 per acre for the fertilized part and $78.10 for the check area, and the average for the two years was $273.78 per acre for the fertilized and $77.35 for the unfertilized part. The fertilized area received 8 pounds of nitrate of soda per tree in 1921, 5 pounds of nitrate per tree in 1922, and 5 pounds of nitrate and 8 pounds of acid phosphate per tree in 1923. The grass on the fertilized area was mowed twice each year and allowed to remain as mulch, and the grass on the check area was mowed once and removed for hay, according to the usual practice.

Such demonstrations have been valuable in teaching not only proper production but satisfactory grading and marketing. During field meetings or tours, such convincing ways of showing results have proved effective in bringing about a general adoption of practices.

Method demonstrations.—Method demonstrations usually consist of doing a piece of work before a group of people just as it is recommended that it be done on individual farms. Among the most popular method demonstrations reported were poultry culling, pruning, and spraying. Showing a farmer and his family how to cull poultry, for example, where a meeting was not prearranged is not recognized as a method demonstration.

Local leaders or club teams are being trained to relieve extension agents of some of the responsibility of conducting method demonstrations. Meetings held by local leaders are better advertised, have a larger attendance, and arouse more interest in accomplishment. Community leaders in Union County, N. Mex., held 22 culling meetings, attended by 350 farm people, who took an active part in handling approximately 2,200 fowls, of which almost 900 were culled. Records were kept for periods of six days both before and after culling demonstrations, and it was found that culling did not lessen egg production. More than 160 farmers were reported to have culled their flocks, and 12 poultry houses were either repaired or built as a direct result of the demonstrations.

An interesting modification of culling demonstrations was reported from Burke County, N. Dak., where all fowls were examined for insects and scaly legs during a culling demonstration. Fowls having lice were treated with sodium fluoride, and those having scaly legs had their legs dipped to kill the scale. Poultry houses infested with mites were sprayed with kerosene or old oil from crank cases. Thus several practices were illustrated at one meeting, and new interest was added to the culling demonstration.

In Ohio, poultry-house building demonstrations, conducted in the same manner as the old barn raisings, proved so successful in 14 counties that extension workers contemplate gradually extending such demonstrations to every county in the State. Poultry houses built at such demonstrations were practically completed in one day

(fig. 4). At one meeting 10 men said they would build poultry houses following plans used in the demonstration house.

As an outgrowth of seed-treatment demonstrations in three Wisconsin counties, tanks were built, in which between 25,000 and 30,000 bushels of potatoes were disinfected with corrosive sublimate. One farmer who had had more than 500 bushels rejected at the shipping

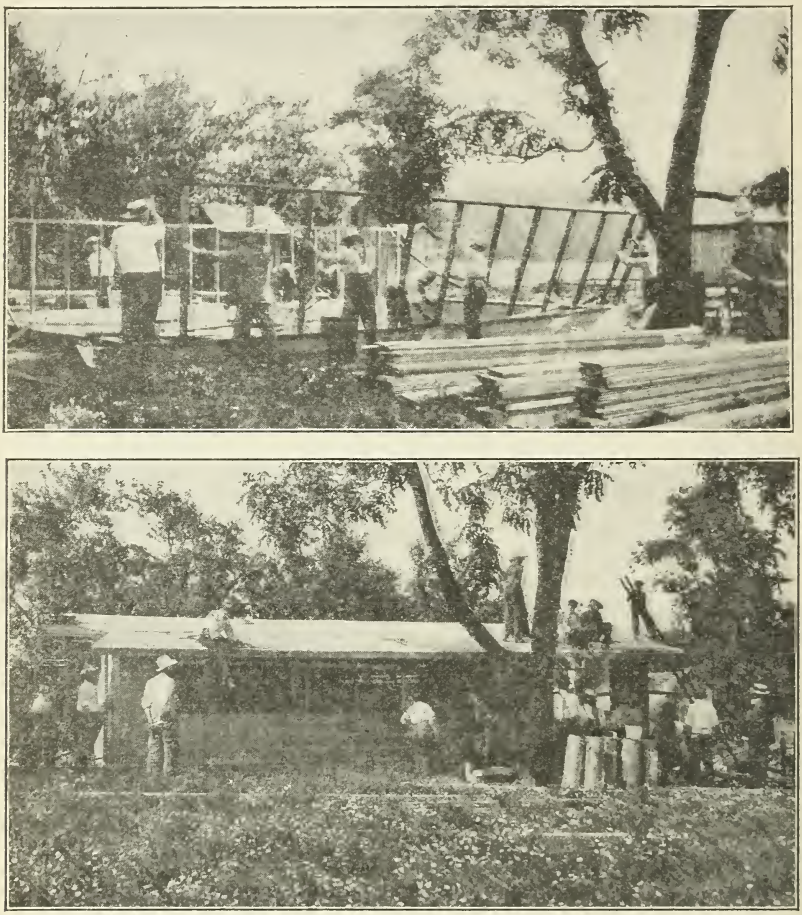

FIG. 4.—Poultry-house building demonstration in Crawford County, Ohio. The owner and 30 of his neighbors began work at 8.30 a. m. and by 5.30 p. m. had completed a modern poultry house. The upper photograph shows the progress of the work at 9.30 a. m. The lower photograph shows the house as it appeared at 4 o'clock. Such demonstrations were held in 14 counties in Ohio during 1923. Similarly, the extension divisions of other States recommended types of poultry houses adapted to local conditions. (Photographs furnished by Ohio Extension Service)

warehouse in 1922 treated seed for 20 acres, leaving two check rows. When the potatoes came up there was a noticeable improvement in the stand resulting from treated seed. At digging time the yield from the treated seed was 35 bushels per acre more than that from the untreated seed, and the crop from treated seed was of much better quality, being free from disease.

METHODS OF OBTAINING ADOPTION OF PRACTICES DEMONSTRATED

Well-developed plans provide for use of chain of influences.—All people are not stimulated to action by the same influences, methods, or means. Well-developed plans for extending a project or practice provide for using a chain of influences which will gradually acquaint people with the advantages of the practice recommended, break down prejudice, and, either through argument or suggestion, gradually win over the individual and finally the majority until the recommended practice becomes generally adopted. Experience in extension work as well as salesmanship seems to indicate that most people are not influenced so much by argument as by suggestion. Seeing or hearing an idea presented in several ways usually results in the acceptance of the idea as a fact, especially if the idea is first well presented locally by convincing demonstrations. Supervisors and agents have given more attention than ever to determining the methods and means best suited to a given project, considering local conditions and the stage of advancement of the project. Methods used should vary considerably, depending on whether the project is in what may be classed as the early or the late demonstration period or in the campaign stage.

Following is a summary of the more important means and agencies which county agricultural agents report they have used successfully:

Achievement days.	Exhibits.	Press.
Booklets or folders.	Fairs.	Radio.
Calendars.	Graphs.	Rhymes.
Campaigns.	Letters—circular.	Score cards.
Camps.	Letters—personal.	Signs.
Charts.	Meetings.	Slides.
Debates.	Motion pictures.	Slogans.
Demonstration meetings.	Pageants.	Songs.
Demonstration of method.	Parades.	Surveys.
	Photographs.	Tours.
Demonstration of result.	Plays.	Visits to farms.
Demonstration teams.	Posters.	Window displays.

Systematic follow-up methods essential.—Extension forces have realized the importance of using definite follow-up methods, and have appreciated that it is not enough to plan and carry through to completion a certain number of demonstrations. Various means of calling attention to successful pieces of work are being devised, making it possible to have one definite step follow another in logical succession, thereby centering and holding attention on the problems and the methods of solving them.

After the work has been planned definitely at the beginning of the year, instructions relating to the problems involved are sent to demonstrators and other leaders, and timely information is given to the press. After the work has been accomplished, field meetings, tours, exhibits, and other kinds of publicity follow in regular succession. Unless attention be directed to results, a general adoption of recommended practices can not be expected within a short period of time.

Use of field meetings and tours increasing.—From year to year greater use is being made of demonstration meetings and tours (fig. 5). The average number of demonstration meetings per

county in 1923 was 54 and the average attendance 25. Such meetings are effective in extending the influence of result demonstrations, as those interested are more impressed by actually observing results than by hearing about them. Group study facilitates the asking of questions and gives opportunity for informal discussion during visits to demonstrations. The demonstrator relates his experience, which usually impresses others. At some meetings portions of the field are harvested by those present, the contrasting results being very convincing.

An automobile tour usually is a series of meetings where a number of people may observe successful demonstrations. If visits are made to demonstrations on average farms, the experience related by the

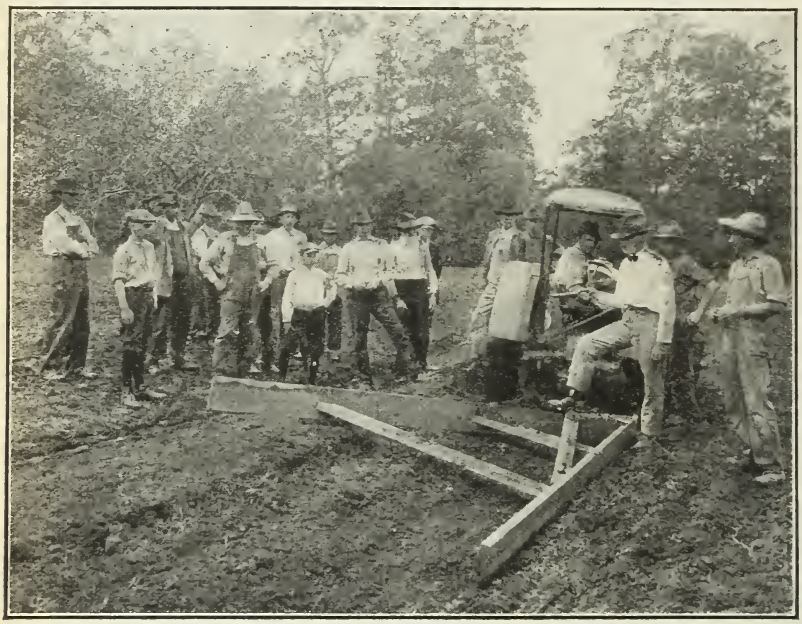

FIG. 5.—Field meeting conducted by county agricultural agent and extension rural engineer in connection with terracing demonstration. During the year county agricultural agents arranged 110,191 demonstration meetings attended by 2,720,660 persons

demonstrator, who is one of the group, will have a stronger influence on mass opinion than if presented by the county agent or specialist. It has been found advisable to have few talks, as the results should be apparent. Exhibit material may be furnished the demonstrator in order to bring out clearly the object lesson.

Tours may be local or county-wide. The tendency has been to focus the attention on one commodity or interest supporting the county program, such as soil improvement, poultry management, or dairying. It is difficult to handle a large number of people who are visiting a demonstration in which all are not interested. The tour requires considerable planning in advance. Some States plan tours when writing projects. The county agent and several committeemen usually go over the itinerary to outline a schedule of stops and to

plan with demonstrators. When the schedule is worked out fully and given publicity, it is possible for a busy farmer or business man to join the party anywhere en route. Dickinson County, Mich., published a chronological itinerary in the local papers, calling attention to the stops that would be made and outstanding crops and livestock that would be seen on these farms and en route. Many agents have furnished such facts in mimeographed form to those attending.

It has sometimes been thought advisable to provide streamers and banners for the automobiles to inform other farmers about the tour. Automobiles are usually numbered, the first car containing men with some distinguishing manner of dress who function as "traffic policemen" in directing the procession at forks of the road or at railway crossings. The last car starts without passengers and picks up each "traffic policeman" left by the first automobile. Persons in the last automobile also give help to automobiles that drop out for repairs. Arrangements are sometimes made for club boys or successful farmers to have their prize livestock or other products on exhibition at conspicuous places along the route, to be seen without stopping. Often, a picnic dinner or some light refreshments are furnished by a public-spirited citizen, and served by club girls and boys.

The wide-awake county agent has taken advantage of the tour as a means of procuring new demonstrators and of interesting business men. Many business men have taken part in tours and have enjoyed the company of successful farmers and club boys. Not only has a spirit of good will been developed between country and town people, but all concerned have obtained a greater vision of the possibilities of extension work. The agent who does not conduct well-planned tours and field meetings misses one of the best means of bringing about a wide spread of influence.

Interest aroused by community meetings.—Nearly all county agents made use of community meetings as a means of procuring spread of influence. During the winter months following the year's work, motion pictures or slides relating to the subject under discussion at the community meeting were usually shown to obtain the interest of people. Motion pictures were used by 1,132 county agents at an average of 15 meetings each. When sufficient interest had been aroused in successful demonstrations, the leader or demonstrator was called upon to relate his experience. Slides made from photographs showing the results served to interest those who did not visit the demonstration. In some counties groups with a commodity or community interest met monthly to discuss timely problems, and at certain seasons of the year, representatives of all such groups met. Demonstrations by club teams may add interest to the occasion. Such meetings are valuable in spreading the influence of the work accomplished and in giving timely instruction. They also aid in developing local leadership, as the motive back of leadership is usually an interest in the commodity or a desire to serve.

Local leaders rendered valuable assistance.—In reporting results accomplished through county agricultural agents, due credit should be given to the small army of community and county project leaders, numbering 125,071 in the 48 States, whose counsel, assistance, and backing made possible the extension results achieved. Although the average amount of time contributed by each is less than three days,

the total amount reported is equal to more than 1,000 full-time workers. The average number of county and local leaders reported per county was 56, and the average number of days contributed by leaders per county was 150. Nearly a fifth of the leaders reported by county agents were assigned to work with boys and girls.

In placing responsibilities on leaders, South Dakota has found it helpful to reach an understanding with them regarding the definite things they will do and then to furnish them with a brief statement of the understanding. West Virginia reported that 500 farm men and women, who were leaders in their respective communities, considered during the State farmers' week how their communities could best solve some of their problems through adult and junior extension work. In commenting on the importance of leadership West Virginia reported that, "Local leadership is of the utmost importance, and finding and awakening persons in the community who have capacity and ability for the work is one of the major tasks of the agricultural extension force."

Local project leaders have been of great assistance to agents in arranging for demonstrations and meetings and in checking up results. An illustration of their assistance in culling demonstrations was reported from Yakima County, Wash. The goal for the county was 80 carefully culled flocks. Two local leaders from each community were invited to attend a one-day culling school conducted by the specialist, and 38 persons representing 24 communities attended. The forenoon was devoted to instruction by the specialist and the afternoon to having the local leaders cull under his supervision. Each local leader was graded according to his ability to cull 10 fowls, and none made a grade below 91. The leaders then assisted the county agent in giving culling demonstrations in various parts of the county. One leader culled a flock of 455 hens, eliminating 94 culls, which laid only four eggs in three weeks.

Noble County, Ind., reported that community project leaders in dairying met with the county agent and dairy specialist and planned the organization of a cow-testing association. These project leaders, with no further assistance from the specialist and only a half day's assistance from the agent, signed up enough members in six weeks to form the association. Ohio reported that local leaders conducted 96 demonstrations in building mash hoppers and ventilators for poultry houses, attended by 3,691 persons, who built 247 ventilators and 434 mash hoppers.

Convenience and low cost important in obtaining adoption of practices.—County agents are being impressed more and more with the importance of convenience and low cost in connection with extension work. It has been estimated that not 1 man in 20 who now distributes ready-mixed poison bait for rodent and insect-pest control would have used it if he had had to procure the chemicals from the drug store himself at retail price and do his own mixing. Well-developed plans for pooling orders, mixing at a central point, and using local leaders have resulted in whole counties undertaking rodent-control campaigns, especially in the Western States.

Recommendations to use lime to overcome soil acidity had but little effect until lime bins or local crushers were provided to make it more convenient for farmers to get lime. These and convenient marl deposits have caused the amount of lime used to increase several

hundred per cent. In Massac County, Ill., orders were pooled, and a trainload of lime was shipped in side-bottom cars and dumped along the right of way of the main line of the railroad, saving an average of 4 miles of hauling.

Another illustration of the importance of low cost and convenience is the cow-testing association developed by the county agent in Whatcom County, Wash., which has been caring for more than 1,500 cows in 149 herds with one tester. One hundred and seven members owning 1,200 cows began testing January 1, 1923, and on October 1 the membership had been increased to 149, owning 1,630 cows. Each member furnished his own milk scale and sampling outfit, and the tester provided his own lodging. Members took their own composite samples of milk once a month and recorded weight of milk and feed for that day for each cow. The rate was $1.25 per cow for the entire year or any part thereof. Samples were gathered once a month, and testing was done at a central point. Records were tabulated and returned to members, but no publicity was given to individual herd records except through averages. Summaries were returned to members at the end of the first six months so that the most unprofitable cows could be disposed of before the end of the year. The summaries on June 1 showed that 3 per cent of the cows in the association up to that time had been sold for beef. Six per cent had been sold to other dairymen as profitable producers at a much higher price than they would have brought before the records were kept, and 16 per cent were considered not profitable enough to hold over winter. All cream separators were checked up in the association, and it was found that the owners of five were losing from $3.50 to $22.50 per month.

Agricultural campaigns proved effective.—A considerable increase has been noted in the use of agricultural campaigns to influence a larger number of persons to adopt demonstrated practices. Sixteen States conducted such campaigns, during which intensive use was made of the best means for carrying the message to the people in a forceful way during a short period of time. Among the most thorough educational campaigns reported were the Missouri clover-prosperity campaign, the Michigan dairy-alfalfa and poultry-culling campaigns, and the Virginia rat campaign.

In Missouri 36,000 people attended the 41 clover-prosperity campaign meetings conducted by three subject-matter specialists of the Missouri Extension Service in cooperation with county agents in 26 counties. The primary purpose of these meetings was to encourage the growing of legumes, especially clover, in a systematic crop rotation. The principal talks were reenforced by the use of a truckload of exhibit material taken from county to county.

All-day demonstration meetings were held on farms where a successful crop of clover was grown as a result of following recommendations of the county agent regarding use of lime, phosphate fertilizers, and good seed. Soil and crop specialists used charts and photographs to illustrate each important step in their arguments. Exhibit material included folding tables with wall-board backs for charts and pictures, samples of lime and limestone, raw rock, acid and superphosphate, seed of the principal varieties of legumes adapted to the region, inoculating material, and soil-testing apparatus.

Although the county programs related to the central theme of clover and prosperity, the talks of specialists were supplemented by such local features as reading of prize essays on "Why clover means prosperity," written by a boy or girl, awarding prizes for the best exhibit of legumes by farmers, a visit to the demonstration field, and special music by band or orchestra which sometimes took the form of a fiddlers' contest. At some meetings there were horseshoe-pitching contests; pig, chicken, or dog-calling contests; and nail-driving contests for women and girls.

The large average attendance of nearly 900 per meeting was due primarily to systematic advertising and to the fact that the meetings resembled all-day picnics. The women prepared an elaborate basket dinner, or, in some counties, the meal took the form of a fish fry or barbecue. A home-economics specialist from the State extension service gave an illustrated talk to the women on such subjects as home conveniences, house furnishing, and interior decoration.

News material, including 30 short stories about the campaign and the importance of legumes in rotation, was prepared in advance and supplied to the local press in sets, one for each of six weeks preceding the meetings in the county. Editors were interviewed personally by the county agent or the specialist, who informed them of plans and solicited their cooperation. Colored wind-shield stickers and window cards were used to call attention to meetings, and red-arrow highway markers giving the place of meeting and date were put up to point the way. All details were omitted from the cards, markers, and stickers, which simply contained the statement, "Your local paper tells all about it." This helped to obtain increased cooperation from the editors. Some business men inserted announcements of the meetings in their regular advertising space in the local papers. The most important local committees were those on publicity, grounds and seats, essay contest, prizes for best legumes, special music, dinner, and refreshment stand.

Intensive county campaigns were conducted in Michigan with as many as 60 or 80 meetings per county, 4 meetings per day, and an average attendance of 15 to 25, depending upon the county and project. The chief purpose was to reach those farmers who do not ordinarily attend, and meetings were therefore advertised as "barn meetings," so that farmers would not feel the necessity of dressing for the occasion. Eaton County, Mich., for example, reported a poultry-culling campaign planned with local people, who were largely responsible for an average attendance of 23, or a total of 1,443, at the 64 meetings conducted. The following comment received by the agent on a card furnished to those who followed the methods demonstrated at the meetings illustrates something of the success of the demonstrations:

> After culling out 42 hens from our flock and keeping them housed for two days, we received one egg from the culls. We picked out the hen that laid the egg, and then received no more eggs from the culls, although we kept them a week longer.

San Benito County, Calif., reported a rodent-control campaign conducted from March to July. Publicity was given by the press, through meetings, wind-shield stickers, and the like, and each Mon-

day was known as "squirrel day." Every store in the county handled the recommended poison mixture at cost, which resulted in 32 tons of poison grain being distributed over 600,000 acres of land.

Virginia reported a rat campaign conducted in 75 counties in which 158,000 people took part, 125,000 pieces of publicity material were circulated, 50,000 pounds of barium carbonate were distributed, 91,365 rat-tails were turned in for prizes, and more than 500,000 rats were killed. Among the reasons given for success of the campaign was the cooperation of leading public agencies, civic organizations, and interested individuals. The governor issued a proclamation calling attention to the dates of the campaign, and money for prizes, poison, and miscellaneous expense was contributed by various county

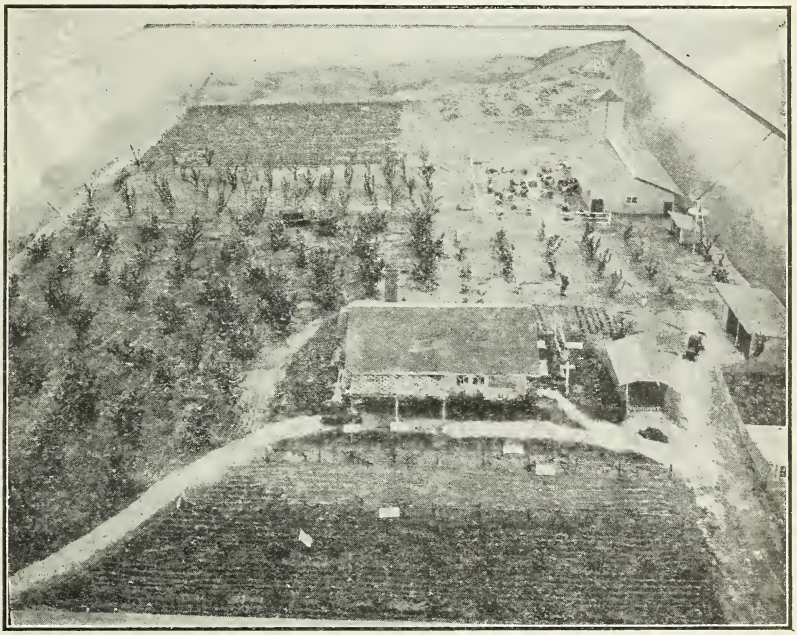

FIG. 6.—Exhibit of model farmstead, showing most desirable arrangement of house, garage, farm buildings, orchards, and fields. Educational exhibits presenting facts or making suggestions were used at fairs and meetings in many States to promote extension projects. (Photograph furnished by California Extension Service)

organizations. Since it is estimated that a rat destroys more than $2 worth of property annually, the estimated net saving to the State was more than $1,000,000.

The ultimate success of an agricultural campaign depends on systematic follow up. One of the most common follow-up features is a card stating a few facts about the project and having blanks to be filled in by those attending, who agree to do two or three definite things and to report the results.

Educational exhibits played important part.—Educational exhibits played an important part in obtaining the adoption of recommended practices (fig. 6). An educational exhibit is one which presents facts or suggestions to teach a lesson or win converts to an idea.

Indiana used an educational exhibit in 26 counties. Three complete extension exhibits were prepared and used almost constantly during the fair season, thereby bringing the ideas before 600,000 people. The county agent of Scioto County, Ohio, placed a model poultry house, financed by the county fair board, on the fairgrounds to increase the interest of farmers in better poultry houses.

Kansas used an effective mechanical exhibit showing a hog moving from sleeping quarters to a self-feeder containing grain feed, then to a self-feeder containing alfalfa hay, then to a watering trough, and back to sleeping quarters. The primary purpose was to call attention to a large model of a self-feeder for hogs. The exhibit was labeled, "Let the hogs do the work; we furnish the plans." Oklahoma reported the use of a large model of a boll weevil to attract the attention of people attending fairs and the display of specimens of insects to increase interest in them. Charts giving methods of control were then shown. Portage and Wood Counties, Wis., exhibited an underweight scrub sire which was labeled, "The most expensive bull in the world." Many local committees prepared interesting community exhibits illustrating different phases of the work.

Another effective exhibit was a window display in the county agent's office. The purpose of such exhibits is usually twofold: (1) To reenforce other efforts to advance such special projects as insect control and variety demonstrations, and (2) to acquaint people with the nature of extension work and results. Contrast exhibits are most effective, especially when only a single idea is presented, such as comparison of sprayed and unsprayed fruit, and alfalfa from limed and unlimed parts of a field.

Quality of extension news articles improved.—County agents realize that the press is one of the most valuable means for acquainting people with the results of county agent work, and they are learning that to insure having the material read they must use newspaper style, giving special attention to the five W's referred to by Kipling:

> I keep six honest serving men,
> They taught me all I know;
> Their names are What? and Why? and When?
> And How? and Where? and Who?

An average of 81 extension articles was written per agent and published in local papers. These served not only to justify the use of public funds, but they also helped to influence people to adopt the practices recommended. Editors prefer to print outstanding accomplishments of cooperators or demonstrators. Every step in the development of an important project has news value if properly presented, but agents have been finding that editors are more anxious to get stories of what happened at meetings or results of demonstrations than announcements of work planned or meetings to be held.

The quality of news articles has improved rapidly because agents and supervisors have given more careful study to the kind, arrangement, and length of articles that people will read. More graphs and photographs, and even cartoons or sketches, have been used to attract attention and increase interest in news articles, circulars, and circular letters. Many agents have induced public-spirited business

men to use occasionally a part of their advertising space to boost some extension project, especially one which was closely related to the business concerned. Suggestions for farm-record keeping, for instance, were given space in the display advertising of bankers and other business men. Druggists ran advertisements which reenforced the spraying recommendations of agents. In addition to using the press, county agents distributed an average of 6,479 copies of circular letters covering an average of 39 subjects.

Connecticut, Florida, New Jersey, and Tennessee have distributed extension calendars. The Tennessee calendar gave, for each month, an idea important to the farm, and was illustrated with striking farm scenes. Connecticut and New Jersey printed poultry calendars which were distributed to poultry demonstrators and cooperators. Florida has used a similar calendar for the past five years, and in 1923 printed and distributed 5,000 copies through county agents and cooperating banks and upon individual request. Montgomery County, Ohio, distributed community programs of work in mimeographed form with calendar attached.

Texas and a few other States have published brief circulars on publicity methods for extension workers. One effective form of publicity has been the essay or poster contest among school children. A poster contest was used in connection with community farmers' institutes in Ohio, and it was estimated that more than 10,000 posters were made by grade pupils of the State. The posters were displayed and judged at local meetings, and the 249 winning posters were entered in the State contest. The preparation by school children of essays, posters, and local articles in connection with different projects has helped materially to increase the interest in projects in individual counties in almost every State.

The latest method for reenforcing county extension projects is the use of the radio for broadcasting subject-matter talks on the more important state-wide projects. In a few States an attempt has been made to give a short course to farmers by radio.

MEASURING PROGRESS

Accurate and comprehensive records essential.—The importance of accurate records of accomplishment is inestimable in establishing a better understanding of the genuine worth of the work and in measuring progress. Agents found records on demonstrations valuable, not only for immediate use, but from year to year, in obtaining a spread of influence. Accurate and complete records of accomplishment furnish convincing testimony of the value of extension work.

Since better records have been kept supervisory forces have found that the financing problem has diminished and the annual turnover in the personnel of county agents has been reduced. This change has enabled supervisors to spend more time in assisting county agents in methods of doing the work. When it becomes necessary to install a new agent, supervisors find that accurate local records are conducive to establishing confidence in the mind of the agent and to giving a vision of future possibilities in extension. Methods for

procuring and keeping accurate records are continually being improved. Simple blanks have been designed which make it easy and even interesting for demonstrators to keep better records.

County agents spent about a third of their time in the office during the year, wrote an average of 1,199 individual letters, and distributed an average of 6,479 copies of circular letters. Office calls relating to extension work have been increasing from year to year. The emphasis placed on office efficiency has had a wholesome effect on annual reports, and it seems that a more definite use has been made of the records in 1923 to obtain a spread of influence from demonstrations, to check or measure progress, and to develop a sound basis for future planning.

County analyses and surveys made by supervisors.—Twenty-four States reported that supervisors made systematic mid-year analyses of progress made on county programs of work, in order to consider methods of completing as much of the work undertaken as possible. These studies usually included making a sort of inventory by placing in opposite columns the goal for each project for the year and the work accomplished to date. After the inventory had been made the county agent and the State supervisors discussed plans for completing the year's work in each major project.

One county agent reported a comprehensive study he had made of the situation in his county. The plan used was simple, involving only the arrangement of communities in alphabetical order at the left of the sheet and the listing of headings covering major activities and other factors at the top of columns. This form was easily filled in from the agent's office records.

Among the more important factors listed having a bearing on results in each township or community in this county were: Number of farms, number of farm visits by agent, number of result demonstrations, number of method demonstrations, and major results of agent's work listed by projects and communities. Results were summarized to show the total number of farm contacts. A "farm contact" in this case was interpreted to mean any important service rendered a farmer which would be likely to impress him with the importance of county-agent work, usually by helping the farmer make larger net returns. In summarizing this study, the agent furnished maps showing the number of farms, number of farm visits, and number of farm contacts for each community. This was followed by an interpretation by communities giving reasons why so small or great an amount of work was accomplished in each project, the aim being to account only for cases where an unusually small or large amount of work was accomplished. Among the more important influences cited were those of good local leaders tending to increase the amount of work accomplished and local prejudices serving as a handicap. For example, in one community having 223 farmers, only 29 farm contacts were made, whereas in another community having 200 farmers, 303 contacts were made. Studies of this kind help to show agents in what communities their work needs to be strengthened and also the influences or methods that should be used to accomplish a larger amount of work.

In Georgia the supervisory forces studied the progress of work in the county throughout the year. A card has been prepared for

inserting in the diary of the supervisor, before visiting county agents, and space has been provided for recording progress on program development, communities reached, functioning of leadership, office management, and general impressions of the progress of work. When filed in the State office, these cards afford an opportunity for studying progress in the counties and the effect of supervisory activities.

Supervisors in Minnesota studied county programs and assisted agents in preparing in parallel columns a comprehensive summary of the results on major projects for the last five years. The summary showed trends in project development and furnished an excellent background for planning the next year's work. In chart form it was found effective in giving local committee and county commissioners a better understanding of county-agent work.

Surveys have been considered essential for determining existing conditions and for measuring results of extension activities. The New Jersey extension director advocates making a survey at the beginning of work on a project and another after several years of

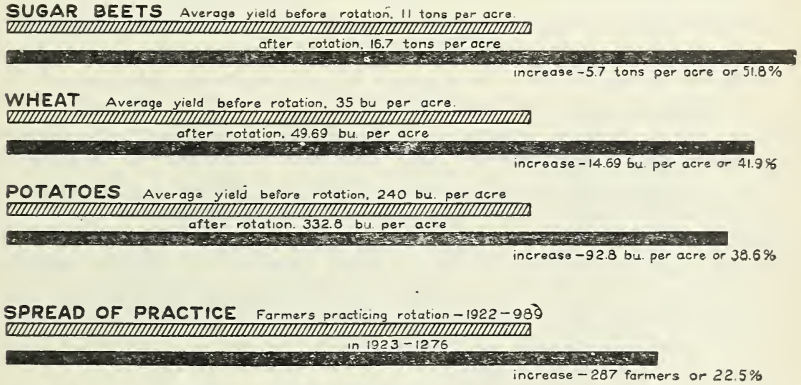
SUGAR BEETS Average yield before rotation, 11 tons per acre
after rotation, 16.7 tons per acre
increase-5.7 tons per acre or 51.8%
WHEAT Average yield before rotation, 35 bu. per acre.
after rotation, 49.69 bu. per acre
increase-14.69 bu. per acre or 41.9%
POTATOES Average yield before rotation, 240 bu. per acre
after rotation, 332.8 bu. per acre
increase-92.8 bu. per acre or 38.6%
SPREAD OF PRACTICE Farmers practicing rotation-1922-989
in 1923-1276
increase-287 farmers or 22.5%

FIG. 7.—Chart showing method of measuring results of crop-rotation project in Utah County, Utah. (Furnished by Utah Extension Service)

work. After demonstrating the value of Trumbull wheat, the agent of Wyandot County, Ohio, conducted a survey which indicated that 75 per cent of the wheat in the county was Trumbull. In order to obtain a check on comparative yields, booklets were given to threshers, who were asked to enter the name of the variety, acreage, and yield of each job threshed. Booklets were returned from 11 communities involving 229 farms and 4,045 acres. The average yield per acre for Trumbull wheat was reported as 20.65 bushels and the yield per acre for other varieties was 16.75 bushels, or an increase of nearly 4 bushels per acre in favor of Trumbull.

The county agent of Utah County, Utah, reported a very interesting method of measuring results of the crop-rotation project by the use of a chart (fig. 7). Many farmers had grown beets for 18 to 20 years, but were discontinuing the practice because of low fertility and damage by nematodes. When the project was begun few farmers practiced rotation; but since nematode control through rotation was demonstrated, their interest in crop rotation has increased.

Following are some conclusions based on analyses of county-agent work in various States and counties:

(1) The amount of work accomplished is usually in proportion to the definiteness of the program, cooperation obtained from local people, and amount of time spent by the agent on projects in the locality.

(2) The largest accomplishments are usually found in communities nearest the agent's headquarters, partly because it is more convenient for these people to call at the office or by telephone.

(3) Interested leaders, convincing demonstrations, progressive farming communities, and active farmers' organizations help materially to increase the demand for the services of the agent and increase the amount of work accomplished in a locality.

(4) In many counties there is such a strong demand for assistance and such good opportunity to work with those who are already converted to extension work that there is not a sufficiently large number of converts each year. This results in too large a number of farm visits and demonstrations occurring on the same farms.

(5) In some counties demonstrations and demonstration meetings have been too few in number in parts of the county, too far from most farmers, or have had results too indefinite to carry conviction.

(6) The number of farm visits has gradually decreased and the number of office calls and local leaders has increased.

Annual reports of agents studied in State extension offices.—Analyses or studies of reports are helpful to supervisors in showing the relative strength and weakness of the various phases of the work of different agents in so far as they may be reflected in the reports. Such studies furnish the basis for a thorough discussion of the most important factors and methods involved in measuring progress. Following are some of the factors considered: Total number of demonstrations; distribution of demonstrations; number of demonstration meetings; average attendance at all meetings; number of definite farm and home visits made; number of leaders cooperating; number of boys' and girls' club members completing and percentage completing; number of news articles and circular letters prepared; major contacts, or the number of people adopting practices; and the narrative report.

Slight changes in questions and weights assigned to each question were made to meet the situation in each State. This arbitrary rating dealt with reports only; and the interpretation by State supervisors always took into consideration the difficulties under which each agent was working, such as an exceedingly large county, local prejudice, lack of office help, and bad roads. A report of a comparison of the agent's work to State averages was returned to each agent by the State supervisor. Table 6 is a comparative study of some results of extension work in Texas made by a State supervisor.

TABLE 6.—*Some results of extension work in Texas, 1922–1923*

Item	Leaders per county		Demonstrations per county		Demonstration meetings per county		Attendance at demonstration meetings per county	
	1922	1923	1922	1923	1922	1923	1922	1923
State average	12	27	76	136	34	77	564	1,002
Farms per county:								
More than 5,000	17	43	65	213	50	120	990	1,240
4,000 to 5,000	16	35	75	164	45	104	922	1,145
3,000 to 4,000	10	30	86	171	41	102	714	1,361
2,000 to 3,000	13	28	98	142	40	59	321	1,072
1,000 to 2,000	11	16	73	97	30	49	451	843
500 to 1,000	6	23	58	90	21	64	451	842
Less than 500	10	12	80	78	10	40	100	522

Comparison of number of practices adopted, demonstrations, and leaders.—Table 7 shows the results of classifying the 48 States in four groups of 12 States each according to the average number of farm and home practices adopted per county. This table shows that States ranking highest in the number of practices adopted also ranked highest in the average number of result demonstrations and local leaders per county. The figures, based on records in the offices of county agents, represent only such results as were covered in annual reports. A large number of practices are adopted which do not come to the attention of the agent, though they are direct results of recommendations made by him.

TABLE 7.—*Relation of number of practices adopted to number of demonstrations and local leaders*

Item	Group 1	Group 2	Group 3	Group 4
Average number of farm and home practices adopted per county	2,252	1,736	1,359	802
Average number of adult and junior demonstrations per county	187	182	138	125
Average number of local leaders per county	75	61	53	41
Average number of days' assistance rendered by local leaders per county	239	123	110	109

SUMMARY

County-agent work has passed the experimental stage and is being accepted on its merits. County agents have helped greatly to stabilize agriculture during the recent widespread economic disturbance. The greatest single need is to increase the quality and volume of extension work, putting particular emphasis on giving assistance to a larger number of average farmers, without at the same time neglecting successful farmers who desire information and assistance. Among other needs of extension work are: (1) Greater teamwork between investigation and extension forces of the State and Nation to determine what is the most essential need for a more profitable and permanent agriculture, (2) more careful analyses of farm problems and solutions recommended, and reduction of recommendations to single practices and simple demonstrations, (3) more convincing demonstrations, adequate records, and use of modern publicity methods, (4) recognition by extension workers of the fact that their success depends as much on the extension methods used as on the effort put forth, (5) greater appreciation of the value of the work by local people in each community and more willingness to cooperate, (6) development of more systematic plans for enlisting the cooperation of local leaders to assist in carrying on extension work, and (7) realization by farm people, as well as extension agents, that the aim in all extension work is more profitable agriculture, more comfortable and convenient homes, and better living.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

June 15, 1925

Secretary of Agriculture	W. M. JARDINE.
Assistant Secretary	R. W. DUNLAP.
Director of Scientific Work	E. D. BALL.
Director of Regulatory Work	WALTER G. CAMPBELL.
Director of Extension Work	C. W. WARBURTON.
Director of Information	NELSON ANTRIM CRAWFORD.
Director of Personnel and Business Administration	W. W. STOCKBERGER.
Solicitor	R. W. WILLIAMS.
Weather Bureau	CHARLES F. MARVIN, *Chief.*
Bureau of Agricultural Economics	HENRY C. TAYLOR, *Chief.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Bureau of Plant Industry	WILLIAM A. TAYLOR, *Chief.*
Forest Service	W. B. GREELEY, *Chief.*
Bureau of Chemistry	C. A. BROWNE, *Chief.*
Bureau of Soils	MILTON WHITNEY, *Chief.*
Bureau of Entomology	L. O. HOWARD, *Chief.*
Bureau of Biological Survey	E. W. NELSON, *Chief.*
Bureau of Public Roads	THOMAS H. MACDONALD, *Chief.*
Bureau of Home Economics	LOUISE STANLEY, *Chief.*
Bureau of Dairying	C. W. LARSON, *Chief.*
Fixed Nitrogen Research Laboratory	F. G. COTTRELL, *Director.*
Office of Experiment Stations	E. W. ALLEN, *Chief.*
Office of Cooperative Extension Work	C. B. SMITH, *Chief.*
Library	CLARIBEL R. BARNETT, *Librarian.*
Federal Horticultural Board	C. L. MARLATT, *Chairman.*
Insecticide and Fungicide Board	J. K. HAYWOOD, *Chairman.*
Packers and Stockyards Administration	JOHN T. CAINE, *in Charge.*
Grain Futures Administration	J. W. T. DUVEL, *Acting in Charge.*

This bulletin is a contribution from

Extension Service	C. W. WARBURTON, *Director.*
Office of Cooperative Extension Work	C. B. SMITH, *Chief.*

○